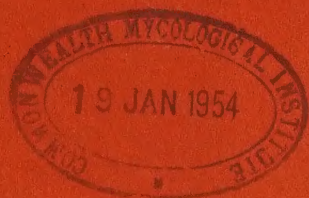




Perennial Flowers and Bulbs for Oklahoma

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Perennial Flowers and Bulbs For Oklahoma

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Perennial flowering plants contribute color, texture, variety, and stability to the overall home grounds design. Once these herbaceous plants are established, most of them pass through the winter successfully as dormant roots and crowns or bulbs and burst into growth again in the spring. Annuals, on the other hand, require purchasing or seeding and transplanting each year. Perennials, with reasonable care, grow and bloom year after year.

There is a great variety of perennials from which to choose. Thus selections may be made to fit almost any need, whether it be size, type foliage, fragrance, or color. Flowers range from the dainty creeping Gypsophila with its tiny flowers and airy growth to the coarse Hibiscus or Rosemallow covered with huge single flowers of white, red, or pink. Sizes vary from 6-inch Moss Phlox to towering 6 to 8 foot Maximilian Sunflowers.

Foliage textures are available in numerous classifications from the fine little leaves of Perennial Flax and Moss Phlox up to such coarse-textured leaves as those on Hollyhocks and Rosemallows.

Gardeners interested in pleasant fragrances can make selections that range from the spicy odor of certain Pinks to the heavy sweet odor of Tuberoses.

To many people, the most important feature of flowers is color. Perennials provide one of the best means of introducing color into the garden. With a bit of planning, Oklahoma gardeners can distribute

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colorful perennials throughout most of the year, starting with the Crocus in February and finishing with the Chrysanthemum in late November.

Oklahomans planning to include perennials in landscape arrangements should choose plants that are adapted to the growing conditions of the State. The herbaceous perennials and bulbs listed in this bulletin are those found to be adaptable to Oklahoma as based on five years' research at the several Oklahoma A. & M. College Experiment Stations and on observations made over the State and surrounding areas. The plants are listed alphabetically by scientific names, but can also be located by common names in the index on page 47.

PERENNIALS IN THE LANDSCAPE PLAN

The overall landscape design should be planned to fit the demands of the climate, topography, buildings, and people involved. This may call for a treatment which cannot be labeled "formal" or "informal," but one which is tailor-made in keeping with the situation. It may include elements which are precise and geometrical along with other parts that are natural and asymmetrical in design. There are several ways in which perennial flowers can contribute to the landscape, whether the subject be a park, a garden club center, school grounds, public buildings, or home grounds.

Many of our present plantings could be made to look better by mere simplification, and flower maintenance could be reduced by thoughtful revision. In a few instances, the use of a formal or geometrical pattern incorporating lawn, tree, shrub, and flower elements is needed. This is especially true when the pattern involves public buildings built along conventional lines or residences of period architecture. Care should be taken, however, that such patterns do not become complicated. Landscapes for new, contemporary buildings and houses should be compatible with the architecture.

Flower Borders

Useful and attractive places for perennial flowers and bulbs are the borders which enclose a property. Here they can be grown against a backdrop of fences, walls, hedges, or shrubbery which will show them off, as well as supply some screening for the dormant winter period when the herbaceous perennial tops die down.

In a tiny garden area on a small property, space for such a border may be limited to two or three feet in depth. This would determine the size and number of plants that might be used. On larger properties,

a border could be five or six feet deep and 25 or 30 feet long. It is often a good idea to have a surfaced walk extend along the front of a border. Such a walk can: (a) serve as a means of conveniently passing by the planting to enjoy the foliage and blooms, (b) provide easy access for planting or maintenance, and (c) serve as a barrier to aggressive Bermuda grass stolons.

The arrangement of plants should place the small flowers toward the front of the border, the medium-sized ones in the center, and the tall ones in the rear. (See Fig. 1.) This technique is good from the point of view of mass arrangement, and it provides the best means of seeing the various flowers in bloom.

Occasional deviation from this procedure adds interest and overcomes monotony. Some gardeners prefer to plant the different sizes in long parallel rows. Others prefer to group the flowers in irregular, interlocking groups which often present the best appearance (Fig. 1). Such borders may be effectively used adjacent to buildings, especially

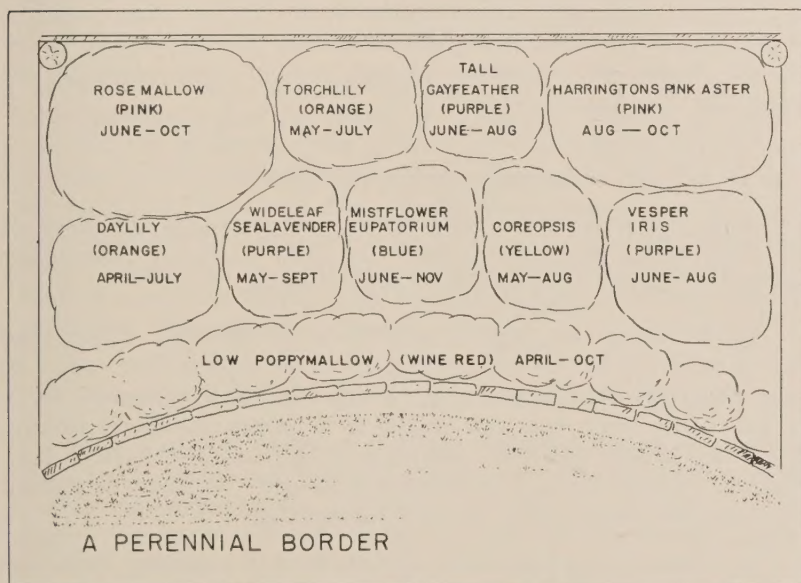


Fig. 1.—A perennial border showing flowers selected for size, time of bloom, texture, and color. The arrangement is such that the taller, more coarsely-textured plants are at the rear of the bed, the medium-sized ones are in the middle, and the low, spreading type flowers are in the front.

if the buildings are of a texture or color to complement the blooms. If not, other plant materials could be used to supplement the perennial flowers. These might be either shrubs at the base of the building or vines on the wall. Accessory buildings such as garages make good backgrounds for perennials. Well-designed fences and walls also provide suitable backgrounds, as do shrub borders or hedges.

Careful planning will result in seasonal bloom from February to November and make the perennial border a colorful and interesting part of the landscape.

Perennials With Shrubs

There are many opportunities for the use of perennial flowers and bulbs in the various shrub plantings on private and public grounds. Spring bulbs used with deciduous shrubs that are slow about greening up will cover an awkward situation in the garden. Temporary planting of easily-obtainable perennials for "fillers" in a permanent shrub planting will complete the intended design until small shrubs are of a size to fulfill their part. Spottiness can be avoided by using quantities of one kind of perennial in a given area. Bare ground between newly-planted shrubs can be hidden by such ground cover plants as the Evergreen Creeping Periwinkles.

Perennials in Special Gardens

Rock and wall gardens rely heavily on perennials and some of the small bulbs. Fortunately there are quite a few of these plants adapted ecologically and by size to such locations.

Good rock gardens require some study and thought. Stones used should be native to the area; not a collection of odds and ends. In most home ground situations, a rock garden is best located on a natural slope where rocks can be laid in a broken horizontal pattern. The stones should be buried two-thirds of the way and inclined back into the slope to catch and conserve moisture. A study of natural rock outcrops will give tips for such construction.

If a natural slope is not available, erect a retaining wall, preferably in a corner where it can be camouflaged with plantings; then place the soil against it to produce a slope. Firm the soil about the stones and let the area settle for several days before planting. Plantings can be accomplished in retaining walls where the stones are laid "dry" (without mortar) and soil is rammed between them. Wall gardens

like this can be very attractive when planted with selections such as the Sedums, Plumbago, Nepeta, and Moss Phlox.

Native Areas

Another method of using perennials and bulbs is in the form called "naturalizing." In parks or on larger home grounds, great irregular masses or "drifts" of plants may be placed to resemble the natural groups of wild flowers found in the woods or on the prairies. The site should be one which is ecologically suitable and reminiscent of the native home of the plants used. Narcissus are often effectively used in this manner.

Low, moist areas in gardens are satisfactory for naturalizing. Many perennials thrive in such sites or in moist areas adjacent to pools. Japanese and Yellow Flag Iris, Eupatorium, and Rosemallows will combine well with moisture-loving shrubs like Buttonbush and Beautyberry to transform wet spots into places of beauty.

Perennials For Cut Flower Arrangements

Many gardeners like to have perennials for cut flowers and indoor floral arrangements. Space permitting, it is well to set aside an area or a row in the vegetable garden for this purpose to avoid stripping the flower border or other beds. A few perennials that may be grown for cutting or "fillers" for floral arrangements include the Aster, Azure Sage, Babysbreath, Chrysanthemum, Coneflower, Coreopsis, Cornflower, Daylily, Flowering Spurge, Gaillardia, Iris, Lionsheart, Mistflower, Peony, Pink, Rosemallow, Shasta Daisy, Showy Stonecrop, Speedwell, Thinleaf Sunflower, Torchlily, and Yarrow.

PROPAGATION OF PERENNIALS AND BULBS

Most gardeners prefer to purchase perennial flowering plants and bulbs from commercial florists or nurserymen. Floriculturists study and acquire experience in the reproduction of crowns and bulbs. For this reason they can do a better propagation job than the average gardener. However, once plants have been purchased and grown for two or three years, the gardener often feels the urge to propagate a few of his favorite flowers himself. He will then find there are many ways to reproduce plants. Most plants are propagated by seed; but division, cuttings, and layering are all practiced on perennials, and a few are grafted.

Seeding

When collecting seed, make sure the fruit pods have matured. This assures good seed. If some of the new hybrid plants are wanted, it is best to buy the seed from a reliable florist or nurseryman.

Seed may be sown directly in the ground where the plants are to grow, sown in a special bed and later transplanted, or sown in a cold frame. Small quantities of seed can be sown in a big pot or flat box and kept in the house or garage.

PREPARING THE SOIL

The soil should be well prepared to provide young seedlings with the best possible growing medium. Begin with a good, easily-pulverized garden loam (50 percent), then add 25 percent sand to improve drainage and 25 percent well-rotted stable manure or compost. Mix and prepare the soil well. Sterilize the soil with steam, heat, or chemicals such as Dowfume. Small quantities can be baked in an oven or pressure cooker for two or three hours. This will kill "damping off" organisms, nematodes, and weed seeds. Water several days prior to seeding to moisten and settle the soil. Rake and smooth the surface after the soil has settled.

If using a pot or container, insure drainage by placing gravel, pieces of broken pot, or a mixture of the two, in the bottom over the drain hole. Use gravel or drain tile under a cold frame if needed, or raise the surface a few inches above the surrounding area.

TREATING AND PLANTING THE SEED

There are several good protective chemicals available for treating seed prior to planting. Seed treatment will lessen the attacks of the organisms which produce "damping off." The treatment is simple. Place the seed in a paper bag with the proper amount of the chemical dust and shake until there is a fine coat of dust on each seed, then proceed with the planting.

Plant the seed in neat rows and designate varieties with legible labels that will remain readable for some time. Seed should be covered not more than $1\frac{1}{2}$ to 2 times its greatest diameter with fine seeding soil. Firm the planted soil.

Place pots or flats in a shallow pan of water and let the water come up from below. Water seeding beds or cold frames slowly and carefully with a fine spray. Continue watering until the plants are up and established.

COLD FRAME PLANTINGS

The time of seeding varies. In general, however, seeding done in late summer can be followed by transplanting into cold frames during early fall, if shade can be applied and the plants given some physical protection (See Fig. 2). The growing season can be extended in the fall by using glass over the plants. However, care must be exercised to harden the plants properly for winter. In Oklahoma's variable winter climate, cold frame plantings must be watched rather closely, having ventilation on warm, sunny winter days and added protection during a wintry period of weather. Cold frame plants should be ready to move to outdoor planting sites by March. Many will make a good showing of bloom the first year.

Division

Perennials such as Iris and Hardy Mums are easily reproduced by division. This is done by cutting an old clump into four or five chunks,

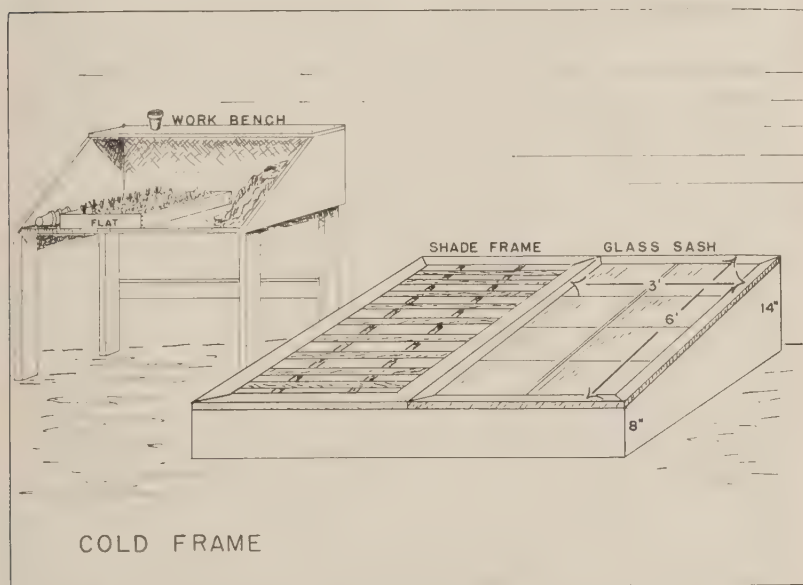


Fig. 2.—A cold frame is useful in propagating perennials. It should be of a size to take standard 3' x 6' glassed sash (right). As plants grow, the sash can be replaced with shade frames of slatted material to allow more air and sunlight (left). In Oklahoma, it is a good idea to place the frames on the south side of a building, or other physical barrier, to ward off the north winter wind and to take advantage of early spring sunshine.

each piece containing elements of the crown and attached roots (See Figs. 3 and 4). These will then grow into nice clumps and produce quite a few flowers the next year. If a quantity of plants is desired, the larger clumps may be washed off with a hose and carefully torn or cut apart into a great number of small plants, each complete with tops and roots.

Division may be done immediately after flowering or in the early spring before growth starts. Cut back the tops of each new plant to re-



Fig. 3.—Perennials such as Iris and Hardy Mums are easily reproduced by division. Here an old clump of Iris has been dug up and is ready for division.

duce loss of moisture through the leaves; this helps prevent the plants from wilting so quickly.

Cuttings

Stem cuttings can be taken from certain perennials including Blue Cerastostigma, Chrysanthemums, Candytuft, Nepeta, Pinks, Phlox, Santolina, Sedum, Teucrium, and Veronica. A few can also be grown from root cuttings.

Tips four to five inches long are taken during the growing season, and the bottom leaves removed two-thirds of the way up the stem. It is best to gather cuttings on a cool morning, keeping them on wet burlap or cloth and "sticking" them quickly into the rooting media. Certain root-inducing hormone powders will aid in the number of cuttings that



Fig. 4.—Dividing an Iris clump into small new plants can be done with a sharp spade by simply chopping the clump into pieces, or by washing all the soil off with a hose and carefully cutting it with a sharp knife. Each new plant should consist of a shoot, a portion of rhizome (fleshy "meat" or underground stem) and some roots. Part of the tops may be removed to reduce transpiration and wilting.

root and in the production of a good root system. After preparing the cuttings, dip the lower ends in the hormone dust, tap to remove excess powder, and immediately place in moist sand or other rooting medium.

RIVER SAND A GOOD ROOTING MATERIAL

An old rooting material that is still good is sharp, clean river sand. Like other rooting media, it is best if sterilized first by heating or treating. The sand may be placed in large pots, flats, or boxes, depending upon the quantity of cuttings to be handled. Water the sand and firm it well. Open rows with a knife blade and insert the cuttings half to two-thirds of their length in the sand. Firm the sand about them by packing with a block of wood. Water a little more. Shade the cuttings and place where they will not dry out quickly. Watch carefully, and syringe the tops with a spray of water several times a day to prevent wilting. Many people are successful with cuttings that are placed in the shade of shrubs on the north side of the house where they are safe from the hot summer winds.

OTHER ROOTING MEDIA

New materials which can be used as rooting media for cuttings are vermiculite and other expanded mineral substances. Do not firm these materials like sand as it is detrimental to their structural makeup. Such rooting media are usually sterile and do not need to be treated.

Layering

Only Blue *Ceratostigma*, *Nepeta*, *Snow in Summer*, and some *Sedums* can be increased by layering. This practice is done by covering some of the wayward, creeping stems with moist soil until they root. They should then be severed from the parent plant and transplanted.

Bulbs

Most bulbous plants naturally produce new bulbs around the parent bulb. If these are separated and planted, they will grow to flowering size in a year or two. *Narcissus* will progress in three years from a single bulb to a double nose or split bulb, then to a mother bulb surrounded by little bulbs attached to the base. Some bulbs, such as *Hyacinths*, are encouraged to produce more small bulbs by cutting deep enough through the base of the large bulbs to reach the growing point. There are various ways of making such cuts, the simplest way being to cut an "X" across the base of the bulb. This allows the bulb to produce a large number of tiny bulbs over the cut surface.

Lilies, too, produce new bulbs around the old bulb, and some produce tiny aerial bulbs in the axils of the leaves along the stem. Lily bulbs are scaly rather than layered. If these bulbs are dug near the end of the flowering period, they may be stripped of part of their outer scales and replanted. The scales may then be planted about 1½ inches deep to grow new bulblets.

PLANTING AND MAINTENANCE

Soil Preparation

Most Oklahoma soils need to be improved to provide the most desirable growing conditions for flower crops. Thoroughly spading the flower bed and adding three inches of some organic matter such as well-rotted barnyard manure, partially-decayed cotton burs, crushed corn cobs, or compost will prove worthwhile. This material should be thoroughly incorporated into the soil to spade depth.

If old barnyard manure is not available and some of the other organic materials are used, commercial fertilizers should be added. A complete fertilizer such as 4-12-4 can be added at the rate of 2½ pounds per 100 square feet. For example, a flower bed four feet wide and 6¼ feet long would need one-half pound. Such materials should be mixed thoroughly into the soil.

Proper drainage is needed for fertilized areas and is an absolute requirement where bulbs are planted.

Planting

Most perennial planting in Oklahoma should be done in the spring just before growth starts. However, in the eastern and Red River counties, fall planting is usually safe. Most hardy bulbs are planted in the fall. This enables them to "get settled" and start roots before spring. Bulbs which are not winter hardy—Gladioli and Tuberoses, for example—should be planted in the spring after the danger of cold weather is past.

Peonies should be planted in the fall at a depth of two inches from the "eyes" or buds to the surface. Deeper planting may result in lack of bloom. Evergreen perennials should be planted at the same depth of previous plantings. Most herbaceous crowns should be just under the surface.

Bulbs vary, but in general are planted at two to three times their own depth (See Fig. 5). In tight clay soils, reduce the depth of plant-

ings; in light sandy soils, increase the depth of planting. Stem-rooting lily types are planted 8 to 10 inches, while those whose roots spring only from the bottom of the bulb may be set at a more shallow depth (5 to 6 inches).

Soil at planting time should be moist and loose, never sticky wet. Water the plants just after planting and firming the soil. Do not put too much water on bulb plantings. Some gardeners prefer to use a little sand under bulbs to insure drainage. Watch the soil, and water as needed, especially in western Oklahoma where winter winds are drying.

GENERAL CARE

Some work will be required to keep plants healthy as the growing season progresses. Hoe or pull weeds, cultivate the soil after each rain or irrigation, and watch for insects. For gardeners who like to have time to admire their flowers, the following suggestions are helpful:

(a) Plan grounds to include only such cultivated areas as can be cared for with a reasonable amount of time and effort.

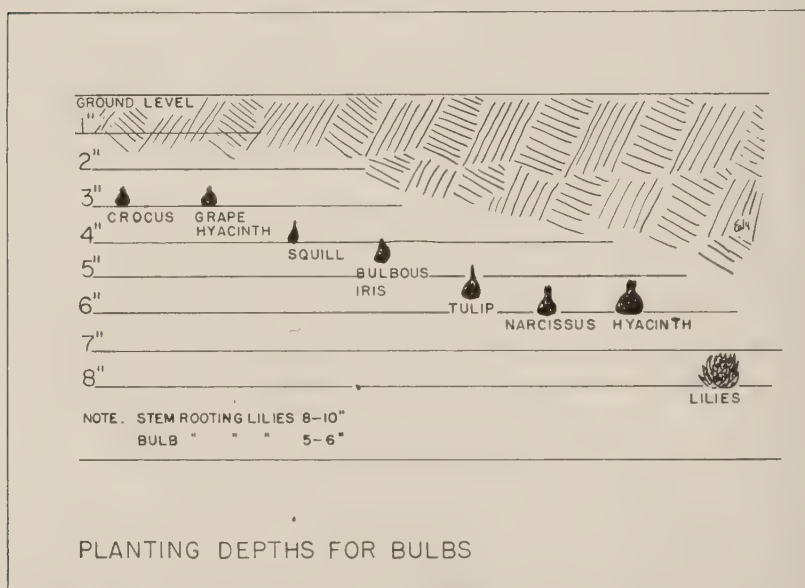


Fig. 5.—Most bulbs have rather definite requirements as to the most favorable depth of planting, and many will refuse to bloom, or even grow well, if planted at depths considerably different from the optimum. Recommended planting depths are shown here for a variety of bulbs grown in Oklahoma.

(b) Select well-adapted flowers that will grow well without special care.

(c) Completely remove obnoxious perennial weeds and grasses before planting flowers, then keep them out.

(d) Investigate mulches—old cotton burs, crushed corn cobs, semi-rotted straw or prairie hay—which will retain moisture and discourage weeds if weed-free themselves.

Watering

It will be necessary to supply additional moisture during the hot summer months. Do not wait until plants have wilted and dried before applying water. The length of watering time will depend upon the method and rate of application, the slope of the ground surface, and the condition of the soil.

When irrigating, do a thorough job. Check to see that the water soaks into the soil five or six inches. This may mean running water for two or three hours, or perhaps all night, in a given spot.

Light sprinkling for a few minutes each evening may be fun, but it *does not water the plants properly*. The soil must be continuously soaked until moistened to the desired depth. As previously mentioned, two inches of mulch will help conserve moisture. Light sprinkling with moisture at the surface only tends to bring the roots to the surface. If the flowers are then neglected for several days, they will die. Light sprinkling does serve a purpose, but must be *in addition to thorough watering*.

When the weather is extremely hot and dry, conditions are ideal for spider mites. Wetting the foliage thoroughly will help discourage mites. Use a hard, driving spray of water to literally wash them off the infested plants.

Various types of water applicators are available, including ring spray sprinklers, mechanical centrifugal sprinklers, and soil-soaker hoses. Soaker hoses put the water on slowly, thus preventing erosion. A burlap bag around the end of a hose without a nozzle is a good way to break up the water flow.

Removing Bermuda Grass

A couple of applications of TCA will kill Bermuda. The amount of spray required will depend upon the strength of the chemical. Gardeners should follow the manufacturer's recommendations or the advice of an experienced person when using TCA as this chemical is

caustic. There is the possibility that rain or irrigation water flowing over a TCA-treated area may wash some of the solution to lower areas, killing materials there. A period of 60 to 90 days should elapse before plants are placed in soil that has been treated with TCA.

Keep two sprayers—one for insecticides and one for weedicides. Do not use the same sprayer for insecticides and for TCA or any other strong weed killer. If one sprayer is used for both, there is considerable danger that the next time the sprayer is used for insecticides, all the plants sprayed might be killed by the weedicide residue.

Grass Barriers

After the flower bed is planted, keep Bermuda grass out by hoeing and digging. It is well to set up a physical barrier between the flower bed and the lawn. The barrier should be of durable material such as concrete, brick or stone with mortar joints, or heavy metal. The grass can then be trimmed next to it or kept at a distance.

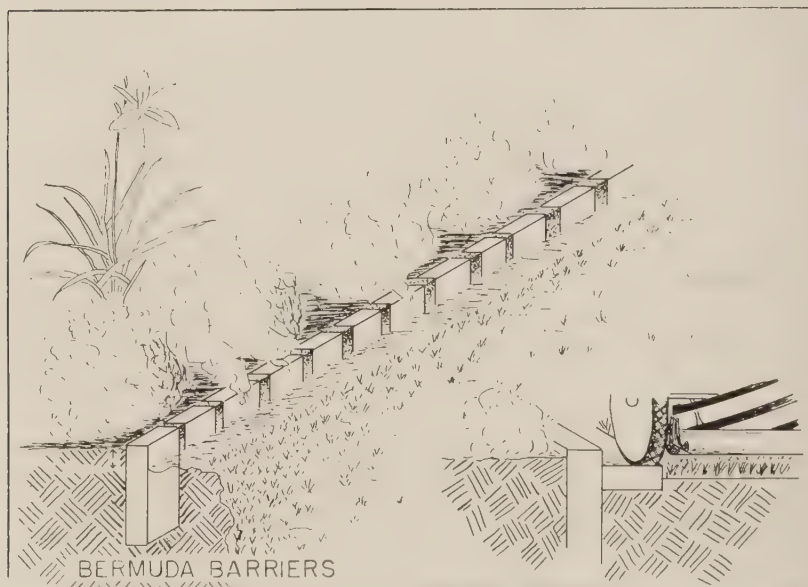


Fig. 6.—Bricks placed on end, with mortar between them, help exclude aggressive bermuda grass stolons. However, such a barrier requires aid to be completely effective. Bricks laid flat just outside the barrier will help in the trimming operation. A mower can then be run with one wheel on the brick, allowing a cut that reduces hand trimming.

A brick or other material of similar width which is laid adjacent to the barrier, or next to a wall, will help reduce hand trimming. Its top surface should be at the height of the grass cut (See Fig. 6).

A clean "No Man's Land" between the flower bed or barrier and the grass can be kept by hoeing or by the use of chemical weed killers. If using chemicals, the surface of the flower bed should be slightly higher than the lawn, or the barrier should keep the chemical from being washed into the flower bed. Do not use this method if surface drainage from the treated area flows over any area where the chemical can cause damage.

Cutting an edging line with a sharp spade will keep out grass but requires a lot of work. There are power trimmers that do a neat job of edging.

INSECT CONTROL

Insects cause more trouble in Oklahoma flower beds than do plant diseases. Insects are numerous in any location and must be considered in any good maintenance program. Gardeners must destroy them before extensive damage is done.

Aphids

Aphids or plant lice are frequent visitors to the flower garden. There are many species and colors of this pest, but all are sucking insects. They feed by inserting their mouth parts into the succulent stems or foliage of plants. They are familiar as green or black masses on the new tips of chrysanthemums and other plants, or in clusters along the stems or under the leaves. If not checked, they multiply rapidly and soon weaken host plants.

Use a contact spray such as 40 percent nicotine sulfate ("Black Leaf 40") to promptly check aphids. One teaspoonful in a gallon of water gives a desired 1 to 800 parts mixture. The addition of a good "spreader-sticker" is advisable. This could be a commercially available detergent material such as Santomerse "S" or a one-inch cube of mild laundry soap dissolved in a portion of the water. (Warming will speed the process.) Such material should be added prior to the nicotine sulfate. Apply the nicotine sulfate with a good sprayer. A two or three gallon compressed-air sprayer is adequate for most home grounds. Nicotine sulfate is a contact spray and must come into contact with the body of every aphid in order to effect a kill. To accomplish this, direct the spray upward from the underside of the leaves. Inspect the plants in four or five days; if live aphids are found, repeat the spray.

If dusting is preferred, use a four percent nicotine sulfate dust or a 1-3 percent rotenone dust.

A driving spray of water will wash aphids off plants for temporary relief.

Spider Mites

Spider mites usually appear in the summer when the weather is hot and dry. Plants may appear to be turning brown and suffering from drought when spider mites invade. A close inspection may reveal a fine webbing on the foliage, and the underside of the leaves may be covered by hundreds of tiny spiders barely visible to the unaided eye. The spiders may be red, greenish, yellow or orange.

Do not be discouraged by all these references to weeding, watering, and spraying. The beginner may select a few perennials that will produce an abundance of color, beauty, and enjoyment for a minimum of effort. Some of the flowers best adapted to Oklahoma include the Balloonflower, Blue Ceratostigma, Coreopsis, Daylily, German Iris, Gypsophila, Hibiscus, Lavendercotton, Lionsheart, Narcissus, Nepeta, Peony, Phlox, Sealavender, Stonecrop, and Torchlily. Native flowers include the Eupatorium, Kansas Gayfeather, Maximilian Sunflower, Ozark Sundrop, Poppymallow, and Rose Verbena. Once established, and of these flowers may be grown with little demand upon the gardener's time.

A gardener can learn to spot these pests early by watching for the bleached out appearance of plant leaves. This discoloration is due to the feeding of the mites. They remove the chlorophyll in countless places, causing the leaves to appear "stippled" with white.

Once located, the spiders should be controlled by spraying or dusting. Fine (325 mesh) dusting sulfur can be applied with a dust gun. Excessive amounts of sulfur during hot weather may burn the foliage.

Wash the foliage occasionally, using a driving spray of water to wash off the spider.

Some new insecticides are proving useful in the control of spider mites ("Aramite," "Dimite," and "Ortho mite"), and sprays of wettable sulfur or tetraethyl pyrophosphate are also effective. If the latter material is used, be careful to follow manufacturer's precautions; it is extremely poisonous. Spider mites have been noted to increase when DDT has been used. Also, violets are a breeding source for the spiders.

The simplest control is to be sure that plants are growing, healthy, and have plenty of moisture.

Leaf-eating Insects

Leaf-eating insects are controlled with stomach poisons. Arsenate of lead is still an effective control and is readily available. A tablespoonful in a gallon of water is effective if combined with thorough coverage.

Grasshoppers

Grasshoppers have been a problem on occasion. The poison bait method of control is limited in scope and is being supplanted by some of the new insecticides such as aldrin. Aldrin is quite effective, but must be handled with care as it is highly poisonous to warm-blooded animals, including people. Chlordane is another new and effective insecticide. Use these materials at the manufacturer's recommendations and follow the precautions of avoiding contact with the skin. Prevent animals from feeding on the sprayed vegetation.

All-purpose Insecticide

Probably a one percent lindane dust or spray diluted according to recommendations comes closest to being an all-purpose insecticide. It is safer and easier to use than most miticides and is quite effective against all the pests mentioned above.

DISEASE CONTROL

Oklahoma's hot, dry summers discourage the growth of many plant disease organisms. If one starts with good healthy stock and keeps it in good growing condition and weed-free, the chances of disease attacks will be reduced.

Mildew

During cloudy, rainy weather, mildew may appear as a gray fungus growth on the foliage surfaces. It is less likely to appear where there is good movement of air through flowers that are not crowded together. Dusting sulfur or wettable sulfur as a spray will control most mildew-type diseases. Bordeaux mixture is also useful. When watering, avoid wetting foliage where mildew is present or nearby.

Rust

Rust appears on foliage as small brown or orange spots that may be scattered or so numerous as to run together. All leaves so infected

should be removed and burned. If using a dust gun, dusting sulfur or a copper-containing fungicidal dust will give control. If a spray is preferred, use a Bordeaux mixture, Fermate, or wettable sulfur. Cover the foliage thoroughly. If it rains the next day, spray or dust again.

If highly rust-susceptible plants are grown, it may be desirable to set up a spray schedule, spraying or dusting every 10 to 15 days from April to September. Spray applications are not needed during periods of hot, dry weather in July and August if the foliage is not infected or has not been wet with the garden hose. In the fall, clean up and burn old leaves or stems which might harbor the disease organisms. "An ounce of prevention" is always a good idea.

Group I

Hardy Perennial Flowers

This group of plants will grow well with average care in relatively open sites over most of Oklahoma. Information is listed in the following order: Botanical name of plant, common name of plant, average height of plant, average spread of plant, period of bloom—being the earliest and latest blooming dates over a five-year period at Stillwater—and color of bloom. Also included is general information about the plant itself or how best to grow it.



Fig. 7.—*Althea rosea*, the Holly hock, is a good selection for the border, or in places where a bold effect can be had with its coarse textured foliage and large, bright flowers.

Althea rosea. Hollyhock. Height: 5-6 ft. Spread: 2-2½ ft. May 18-August 30. Various.—Prefers good, well-drained loam. Coarse texture. Useful in border, for plantings about new homes as “fillers.” Occasional red spider damage in dry weather. Sow seed in August or September for bloom the following year. Grow in sunny location. (See Fig. 7.)

Amsonia tabernaemontana. Willow Amsonia. Height: 2½-3 ft. Spread: 2-2½ ft. April 20-June 16. Pale blue.—Not well known. Very well adapted. Few pests. Thick clumps. Native in Eastern Oklahoma. Light blue flowers. Interesting fruit pods. Sun or partial shade. [Noted a rust disease once.*]

Anchusa azurea. Italian Bugloss. Height: 3½-4 ft. Spread: 2-3 ft. April 18-September 2. Good blue.—Tough, prickly foliage. Erect plants. Few pests. Propagated by division, root cuttings, or seed. Sun or partial shade.

* Information in the brackets includes unusual occurrences observed at Stillwater during a five-year test on perennial species and varieties.

Anchusa azurea. HV** Dwarf Dropmore Bugloss. Height: 2-2½ ft. Spread: 2-2½ ft. April 20-July 30. Good blue.—A tough one. Prickly foliage. Few pests.

Asclepias tuberosa. Butterfly Milkweed. Height: 2-3 ft. Spread: 1½-2 ft. May 18-August 30. Brilliant orange.—A good native perennial. Transplant while young. Use in border or rock garden. Prefers well-drained soil and sunny location. Bees and butterflies love it.

Aster novibelgi. HV Harringtons Pink Aster. Height: 3½-4 ft. Spread: 3-3½ ft. August 26-October 24. Pink.—The best and most floriferous aster tested. Subject to red spider mites during dry weather. Use in back of border. Propagated by division. Other white, blue and red flowering types are available.

Baptisia australis. Blue Wild-indigo. Height: 24-30 in. Spread: 18-24 in. May-June. Blue.—Fine native plant. Terminal spikes. Will grow in fairly dry areas in well-drained soils and full sun. Lupines are not too successful in Oklahoma, but this is a fine plant with tall, dark blue spikes that are just as attractive. Sow seed in place, as the plants are difficult to transplant.

Callirhoe involucrata. Low Poppymallow. Height: 3-6 in. Spread: 18-24 in. April 27-October 3. Wine to purplish red.—A creeping native that often has been overlooked. Transplant while young, as the root system soon penetrates deep into the soil. Prefers well-drained, sandy loam.

Ceratostigma plumbaginoides. Blue Ceratostigma. Height: 10-12 in. Spread: 18-24 in. June 2-October 17. Blue.—Often called Plumbago. Creeping, vine-like growth. Long period of bloom through the hot weather. Good in rock garden or border foreground. Chiefly propagated by division. Oklahomans should use this plant more.

Coreopsis auriculata. Superb Eared Coreopsis. Height: 2-3 ft. Spread: 18-24 in. June 2-November 3. Yellow.—Few pests. Most of the Coreopsis produce quantities of seed and readily self-sow. Greatest bloom during June.

Coreopsis grandiflora. Bigflower Coreopsis. Height: 2-3 ft. Spread: 18-24 in. May 4-September 30. Bright yellow.—Good long stems for cut flowers. Profuse bloomer. Keep picked to lengthen bloom period. Useful in the border. Easy to grow. Self-sow readily. Keep some of these new plants coming along to replace old crowns. There are other

**HV= Horticultural variety.

species of *Coreopsis*, but this one, and its horticultural varieties, is the best for Oklahoma conditions. (See Fig. 8.)

Coreopsis grandiflora. HV Mayfield Giant *Coreopsis*. Height: 2½-3½ ft. Spread: 2-2½ ft. May 4-October 25. Yellow.—Good long stems for cut flowers. Very floriferous.

Coreopsis grandiflora. Double Sunburst. Height: 2-3 ft. Spread: 18-24 in. May 11-October 25. Yellow.—Good long stems for cut flowers. Very floriferous.

Coreopsis (pubescens). Height: 2-3 ft. Spread: 18-24 in. May 24-September 29. Yellow.—Not as nice as *Coreopsis grandiflora*.

Crocus vernus. Common Crocus. Height: 3-4 in. Spread: 2½-3 in. February 21-March 28. Various.—Prefers light warm soil. Rabbits will often keep foliage eaten off and thereby weaken bulbs.



Fig. 8.—*Coreopsis grandiflora*, the Bigflower *Coreopsis*, is well adapted to most Oklahoma conditions. Its bright yellow flowers will bloom in profusion over a long period of time if the old blossoms are removed before seed is set.

Dianthus plumarius. King of the Blacks Grass Pink. Height: 10-18 in. Spread: 10-12 in. May 18-October 11. Deep maroon.—A fine grass-pink. Needs well-drained soil.

Dianthus caryophyllus. Flame Carnation. Height: 10-14 in. Spread: 10-12 in. May 11-November 22. Red.—Prefers protected site.

Dianthus sp. Golden Sun. Height: 10-12 in. Spread: 10-12 in. May 8-September 24. Yellow.—Unusual color for *Dianthus*.

Echinacea purpurea. Purple Echinacea. Height: 20-30 in. June-July. Rosy purple.—Another native. Has interesting flowers with drooping petals. Well adapted to sunny locations. Often called Cone-flower. Also listed occasionally under the name *Rudbeckia purpurea*. Propagated by division of crowns.

Eryngium amethystinum. Amethyst Eryngo. Height: 18-24 in. Spread: 12-18 in. May 11-August 30. Blue.—Unusual bluegreen prickly foliage. Flowers are prickly, also. Few pests. Well-drained, sandy loam soils in full sun. Grow from seed and transplant while young, or sow in place.

Eupatorium coelestinum. Mistflower Eupatorium. Height: 18-24 in. Continuously spreading. June 13-November 19. Blue.—Small blooms. Some call it Hardy Ageratum. Spreads quickly in sun or shade. Clumps are easily divided. Will grow in a variety of soils.

Euphorbia corollata. Flowering Spurge. Height: 18-20 in. Spread: 15-24 in. June 1-October 9. White.—A native of Oklahoma. Many small flowers covering the plants; reminds one of Babysbreath. A nice filler for perennial borders or for cut flower arrangements. Seedlings grow slowly. Clumps may be divided.

Gaillardia aristata. Perennial Gaillardia. Height: 24-30 in. Spread: 18-24 in. May 11-November 19. Yellow and red.—One of the best for Southwest. May get a bit tall and fall over, but their ability to grow and bloom during a drought is commendable. Can be grown easily from seed, root cuttings or divisions. For best flowering results, keep some of the new plants coming along in sunny locations on well-drained soil.

Gaillardia aristata. Portola Hybrid Gaillardia. Height: 24-30 in. Spread: 18-24 in. May 17-November 3. Yellow and red.—One of best for Southwest. May get a bit tall and fall over.

Gaillardia aristata. (Superb) Gaillardia. Height: 2-3 ft. Spread: 18-24 in. June 7-November 7. Yellow and red.—One of best for Southwest. May get a bit tall and fall over.

Gypsophila. Bristol Fairy. Height: 12-24 in. Spread: 18-30 in. May 24-October 25. White.—A lovely, fine-textured plant. Good filler for cut flowers.

Gypsophila olhamiana. Oldham Gypsophila. Height: 18-36 in. Spread: 18-36 in. June 2-September 29. White.—The texture of *Gypsophila* Bristol Fairy is nicer; this one is more open and coarse.

Gypsophila paniculata. Babysbreath. Height: 12-24 in. Spread: 18-30 in. May-July. White.—A lovely, fine-textured plant. Good filler for cut flower arrangements. A nice addition to flower or shrub border. Good in limestone soils and open sites. May be propagated by seed, division, and cuttings. Some fancy double types are grafted. *Gypsophila olhamiana* is more open in growth and coarser textured. A smaller type is *Gypsophila repens*, the creeping gypsophila. (See Fig. 9.)

Gypsophila repens. Rosy Creeping Gypsophila. Height: 8-12 in. Spread: 10-18 in. April 14-October 25. White.—A good edging or rock garden plant.

Helianthus decapetalus. Golden Thinleaf Sunflower. Height: 3-5 ft. Spread: 18-24 in. June 6-October 28. Yellow.—Forms nice clumps. Not "leggy." Suitable for cut flowers. Prefers sunny locations and responds to enriched soil. Propagate by division.

Helianthus helianthoides. HV Pitcher Heliopsis. Height: 2-3 ft. Spread: 18-24 in. May 24-October 19. Yellow to orange.—Forms good clumps. Few pests. Will do well in open, dry locations. Reproduced by seeds or division.

Helianthus maximiliana. Maximilian Sunflower. Height: 6-8 ft. Spread: 18-24 in. August 3-October 19. Golden yellow.—A fine native flower. Erect stems. Used chiefly in the back of the border or for naturalizing.

Hemerocallis species. Daylilies. Height: 1½-4 ft. Spreading. May-July. Yellows, oranges and rusty reds.—There are over 20 species of daylilies and hundreds of horticultural varieties, most of which are very well adapted to Oklahoma growing conditions. The foliage is a mass of grass-like, long, narrow leaves above which the flower stems bear their lily-like flowers. Each individual flower lasts one day, being

replaced by a fresh one the next day. They are easily grown in a variety of soils and exposures. They respond to good, moist soil and partial shade. Propagation is chiefly by division of the fleshy root systems. Certain ones are delightfully fragrant.

The following are some of the more popular flowers of this species:

Hemerocallis aurantiaca. Orange Daylily. Height: 2-2½ ft. Spread: 18-24 in. May 8-May 24. Orange.

Hemerocallis citrina. Citron Daylily. Height: 3-4 ft. Spread: 18-24 in. June 9-July 17. Sulfur yellow.

Hemerocallis flava. Lemon Daylily. Height: 2-2½ ft. Spread: 18-24 in. June 9-July 22. Yellow.

Hemerocallis fulva. Tawny Daylily. Height: 2½-3 ft. Spread: 18-24 in. June 13-July 13. Orange.

Hemerocallis fulva. HV Kwanso Daylily. Height: 2½-3 ft. Spread: 18-24 in. June 22-July 22. Orange (Double).

Hemerocallis minor. Grassleaf Daylily. Height: 2-3 ft. Spread: 18-24 in. April 20-May 24, or September 25, or October 5. Golden yellow.

Hemerocallis sp. Aureole Daylily. Height: 2-3 ft. Spread: 18-24 in. April 4-May 8. Golden yellow.

Hemerocallis sp. Baroni Daylily. Height: 2-3 ft. Spread: 18-24 in. June 16-August 7. Yellow.

Hemerocallis sp. Gold-dust Daylily. Height: 18-24 in. Spread: 15-18 in. May 8-June 16, or September 11, or September 29. Golden.

Hemerocallis sp. J. A. Crawford Daylily. Height: 2-3 ft. Spread: 18-24 in. June 13-July 23. Yellow and apricot.

Hemerocallis sp. Lemona Daylily. Height: 3-4½ ft. Spread: 18-24 in. June 22-August 26. Yellow.

Hemerocallis sp. Winsom Daylily. Height: 2-2½ ft. Spread: 18-24 in. May 29-July 8. Yellow.

Hibiscus coccineus. Scarlet Rosemallow. Height: 4-5 ft. Spread: 4-5 ft. July 7-October 25. Scarlet.—Large blooms. Good for back of perennial border. Few pests.

Hibiscus palustris. Common Rosemallow. Height: 4-5 ft. Spread: 4-5 ft. June 9-October 25. Pink.—Use in the back of border. Sometimes used for temporary plantings for quick effects. Huge showy 6-inch flowers. Horticultural varieties bearing red flowers, and white flowers with crimson eyes are attractive. One disadvantage is that they are slow about starting to grow in the spring, lying dormant until the soil warms up. Will grow in sun or partial shade, good soil or poor, dry or moist sites. Propagate by division of fleshy root systems. For a variety of colors, grow them from seed.

Hibiscus palustris. HV (Jumbo Red). Height: 4-5 ft. Spread: 4-5 ft. June 9-October 30. Red.—Coarse texture.

Hibiscus palustris oculiroseus. Crimson Eye Common Rosemallow. Height: 4-6 ft. Spread: 4-5 ft. June 7-October 17. White with crimson center.

Hyacinthus orientalis. Common Hyacinth. Height: 8-12 in. March 27-April 7. Various.—Let foliage mature. Transplant bulbs every two or three years.

Iris dichotoma. Vesper Iris. Height: 2-2½ ft. Spreading. June 22-September 22. Off-white and purple.—Has slender, branched flower stems. Blooms only in the evening. Flowers are smaller than most Iris. Blooms in mid-summer.



Fig. 9.—*Gypsophila paniculata*, the Babysbreath, is a dainty plant with an airy effect. It is useful in both the flower border and in cut flower arrangements. The small white flowers will harmonize with numerous other flowers.

Iris germanica. German Iris. Height: 2-3½ ft. April-June. Purple.—Under this heading many include the tall, bearded types of Garden Iris. Actually they are mostly hybrids of several species, such as *Iris pallida*, *Iris variegata*, or others. These hybrids are obtainable in many beautiful colors and color combinations ranging from white Snow Flurry, yellow Ola Kala, blue Great Lakes, through red Ranger to bronzy Bryce Canyon. Iris of this type are easily grown, and there are literally thousands of horticultural varieties available. They grow in a variety of situations, but prefer sunny locations in well-drained soil. Divide every three years for best results. Plant rhizomes just under the soil surface.

Iris pseudacorus. Yellow Flag Iris. Height: 2-3 ft. Spreading. May 9-June 4. Rich yellow.—Forms large clumps. Prefers moist soil, but is not essential.

Iris pumila. Dwarf Iris. Height: 10-12 in. Spreading. April 6-April 25. Various.—A nice dwarf type. Useful in rock gardens. *Iris chamaeiris* is another dwarf form.

Iris siberica. Siberian Iris. Height: 12-14 in. Spreading. May 11-June 4. White, blue.—A dainty type Iris.

Kniphofia uvaria. HV Martins New Hybrid Torchlily. Height: 2-3 ft. Spread: 18-24 in. May 9-June 22. Orange and yellow.—An odd flower head. Known also as Tritoma. (Red Hot Poker). Useful in groups in front of shrub foliage for a striking effect. Not particular about soil. Prefers sunny location. Perfectly hardy in Oklahoma. Winter kills farther north. (See Fig. 10.)

Lathyrus latifolius. Perennial Peavine (or) Perennial Sweet Pea. Spread: 2-8 ft. June-August. Various colors in HV's, mostly pink and purple.—A sprawling vine with sweet pea type flowers. Very hardy.

Liatis pycnostachya. Kansas Gayfeather. Height: 3-4 ft. Spread: 12-18 in. June 22-August 22. Rosy Purple.—Unusual color does not blend very well with other flowers. Use with white flowers. Tall slender spikes. Native. Will grow in a variety of soils in sun or partial shade.

Liatis scariosa. Tall Gayfeather. Height: 4-5 ft. Spread: 12-18 in. June 16-August 5. Purple to light purple.—Tall spikes, long and slender. Similar to Kansas Gayfeather.

Liatis scariosa. HV September Glory. Height: 3-4 ft. Spread: 18-24 in. July 1-August 22. Light purple.—Tall slender spikes.

Lilium formosanum. Formosa Lily. Height: 3-4 ft. June 1-June 10. Off white.—Be sure to set the bulbs deep enough (8 in.); will do better if given more attention.

Lilium pumilum. Coral Lily. Height: 18-24 in. April 5-May 25. Scarlet.—A dainty lily. Prefers cooler soil.



Fig.10.—*Kniphofia uvaria*, the Torchlily, or Red Hot Poker plant, has unusual type flowers borne on tall stems above a grass-like foliage. It is quite "at home" in Oklahoma and could be grown more extensively. The orange and yellow flowers produce a striking effect.

Lilium regale. Regal Lily. Height: 3-4 ft. May 17-June 16. White.—Plant bulbs deep. Protect from strong winds.

Limonium latifolium. Wideleaf Sealavender (Statice). Height: 1½-2 ft. Spread: 1½-2 ft. May 24-September 29. Purple.—Useful in border and as cut flower filler. Well adapted. Dainty, airy, fine-textured flower heads above coarse-textured foliage. Prefers well-drained soil in sun or partial shade. To reproduce, sow seed or make root cuttings.

Linaria dalmatica. Dalmatian Toadflax. Height: 18-24 in. Spread: 12-18 in. April 20-November 30. Yellow.—Self sows and spreads rapidly. Looks like a small snapdragon flower-head. Grows in sunny locations and almost any soil.

Linum perenne. Perennial Flax. Height: 18-20 in. Spread: 10-12 in. April 14-August 30. Light blue.—Erect growing and blends well with other flowers. Fine-textured foliage. Easily grown from seed.

Monarda fistulosa. Wild Bergamot. Height: 1½-3 ft. Spread: 15-18 in. June-August. Lilac.—A native of Oklahoma that is little used. Will thrive in a variety of soils in sun or partial shade. Grows best in moist soils, however.

Narcissus sp. Narcissus. Height: 8-18 in. Spread: 8-10 in. March 14-April 18. Various; mostly yellow and white.—Most Narcissus are well adapted to Oklahoma conditions.

Nepeta mussini. Persian Nepeta Catnip. Height: 10-12 in. Spread: 12-24 in. April-November. Blue.—One of the best of the low, spreading types of perennials. Needs little attention once established and grows in many kinds of soil, and in either full sun or partial shade. Ideal for rock garden or in front of perennial border. The small blue spikes of flowers appear in great numbers during May and June. Blooms fairly well all summer and fall, until November. Propagated by cuttings or layering.

Nierembergia caerulea. HV Purple Robe Cupflower. Height: 10-12 in. Spread: 18-24 in. May 1-November 7. Purple.—A tender perennial here and may need renewing.

Oenothera missouriensis. Ozark Sundrop. Height: 8-10 in. Spread: 12-18 in. May-June. Bright yellow.—Beautiful large golden-yellow flowers 3-5 inches across, borne on low, spreading plants. Native of Oklahoma. Difficult to transplant. Likes clay banks and sunny exposures. A "natural" for rock gardens. Grown from seed sown in place, or from crown divisions.

Paeonia sp. Peony. Height: 18-30 in. Spread: 18-20 in. May-June. Various.—Peonies are useful in a great number of ways. Many varieties are available in both single and double flowers. Their foliage is attractive and complements the beautiful flowers. Grown as specimens, in the border and foundation plantings, and for massed effects. Excellent cut flowers. A well-prepared loam soil in a well-drained area provides the best growing situation. Extra water during dry periods is beneficial. Full sun is best for flower production. Propagation is chiefly by division of the clumps. Be sure to get one or two buds or "eyes" with each unit. These buds should be about 2 inches deep. Deeper planting discourages blooming, as does too much shade or root competition from other plants.

Penstemon grandiflorus. Shell leaf Penstemon. Height: 18-24 in. Spread: 10-12 in. April 27-June 16. Purple, blue.—Odd gray foliage. Erect growing. Flowers borne on tall spikes. Will do best out of the wind and in a good loam soil. Other types and colors available. *Penstemon cobea* has a nice white to bluish-colored flower and *Penstemon murrayanus* is scarlet. All three are native to Oklahoma.

Phlox divaricata. Sweet William Phlox. Height: 8-18 in. Spreading. April-May. Blue.—Widely planted. Not particular as to situation.

Phlox glaberrima. HV Miss Lingard. Height: 18-24 in. Spread: 10-12 in. May 11-November 22. White.—A good white phlox.

Phlox paniculata. Summer Phlox. Height: 18-24 in. Spread: 10-12 in. May-September. Various.—This type garden phlox is both adapted and useful in this area in flower borders or in front of shrub masses. Grows in ordinary soils, but produces best in a moist, fertile loam. Divide in the early spring.

Phlox paniculata. HV Beacon. Height: 18-24 in. Spread: 10-12 in. June 16-October 19. Red.—This type garden phlox is both adapted and useful in this area.

Phlox paniculata. HV Pink Beauty. Height: 18-24 in. Spread: 10-12 in. July 6-November 22. Pink.—Another good variety.

Phlox paniculata. HV Miss Verboom (Rosalinda). Height: 18-24 in. Spread: 10-12 in. May 18-November 22. Pink.

Physostegia virginiana. Virginia Lionsheart. Height: 20-36 in. Spreading. August 12-November 28. Rosy purple.—Spike blooms. A useful perennial. Well adapted to Oklahoma. Note period of bloom

during the hot summer and into the fall. Easily grown and propagated by division. A vigorous plant, especially if watered a little in the summer.

Platycodon grandiflorum. Balloonflower. Height: 18-30 in. Spread: 12-18 in. June 1-October 17. Blue and white.—Unusual balloon-like flower buds. May fall and sprawl a little, but excellent for summer bloom. Staking is advisable. A sandy loam soil in full sun or partial shade is good for these flowers. Easily propagated from seed. Excellent cut flowers.

Platycodon grandiflorum. HV Marie's Balloonflower. Height: 18-30 in. Spread: 12-18 in. June 9-November 3. Blue and white.—Double blooms. Similar to *Platycodon grandiflorum* Balloonflower.

Salvia pitcheri. Pitchers Sage. Height: 24-30 in. Spread: 18-24 in. July-September. Light blue.—An open, leggy-growth habit. Native.

Santolina chamaecyparissus. Cypress Lavendercotton. Height: 12-15 in. Spread: 2-3 in. May 15-July 15. Yellow.—Useful edging plant. "Evergreen." Best if cut back to crown every two or three years. Somewhat woody. Can be sheared for miniature hedges. Will grow in full sun in a variety of soils. Propagated by cuttings or layering.

Sedum kamtschaticum. Orange Stonecrop. Height: 6-9 in. Spread: 8-12 in. May 24-August 26. Orange.—Useful rock garden type. Creeping growth habit. Prefers sunny location, well-drained soil. Cuttings root quickly.

Sedum spectabile. Showy Stonecrop. Height: 18-24 in. Spread: 12-18 in. August 12-October 25. Crimson to rose.—Forms compact clump of foliage with flower stems rising above. Good for the border.

Solidago altissima. Tall Goldenrod. Height: 2-6 ft. Spreading. September-November. Yellow.—This plant is native, as are the little (1-1½ ft.) Missouri Goldenrod, the 2-5 ft. Canada Goldenrod, and the 4-6 ft. Stiff Goldenrod. These plants are very much "at home" in Oklahoma and could be used more than they are. Taller sorts fall over if in windy location.

Solidago rigida. Stiff Goldenrod. Height: 4-5 ft. Spread: 12-18 in. September 7-October 17. Yellow.—Grows erect. Several slender stems. Tends to fall over by blooming time. Lacebugs like this plant.

Teucrium chamaedrys. Chamaedrys Germander. Height: 10-14 in. Spread: 12-18 in. June 13-October 11. Rosy purple.—May be sheared

into miniature evergreen hedge. Excellent edging. Makes an interesting spot in rock garden. Not too particular as to soil. Propagated from cuttings. Needs more moisture than most in this group.

Tulipa gesneriana. Common tulip. Height: 4-18 in. Spread: 8-10 in. March 15-May 15. Various.—Only a few varieties were tested, as adaptation to this area is well known.

Verbena canadensis. Rose Verbena. Height: 4-5 in. Spread: 18-24 in. April-June. Reddish purple.—A fine, creeping-type native flowering plant. Excellent for rock garden. Grows in full sun or partial shade and in a variety of well-drained soils. Propagated by cuttings or division.

Group II

Perennial Flowers

The flowers in this group require a more protected site location than those listed in Group I. Greater attention to cultural methods is needed to assure good growth and flowering performance.

Achillea millefolium roseum. Pink Yarrow. Height: 18-24 in. Spread: 12-18 in. June 13-July 22. Pink.—A rather nice flower compared to Common Yarrow. Good in the border or for cut flowers. Prefers sunny site and rich, moist soil. Propagated by division or seed.

Achillea nana. Dwarf Yarrow. Height: 8-10 in. Spread: 8-12 in. May 24-August 16. White.—A good dwarf type. Useful in rock garden.

Achillea ptarmica. Sneezewort Yarrow. Height: 24-30 in. Spread: 18-24 in. May 8-November 16. White.—A good cut flower. May fall over and sprawl. Horticultural varieties Perry White and Pearl are double.

Achillea ptarmica. Sneezewort Yarrow.—HV Pearl. Height: 18-24 in. Spread: 12-18 in. May 28-October 16. White.—Similar to HV Perry White.

Achillea ptarmica. Sneezewort Yarrow.—HV Snowball. Height: 18-24 in. Spread: 12-18 in. May 18-November 6. White.—Similar to HV Pearl.

Ajuga reptans. Carpet Bugle. Height: 3-4 in. Spread: 12-15 in. May 10-June 18. Blue.—Small spike blooms. Plants in shade thrive. [Plants in full sun died.] Makes good ground cover for small shady areas in the Eastern half of Oklahoma. Divides readily.

Alyssum argenteum. Yellow Tuft Alyssum. Height: 12-15 in. Spread: 15-18 in. April 27-September 24. Yellow.—Good in rock or wall gardens. Prefers well-drained limestone soils and sunny locations. Reproduced by cuttings. [Survival declined after two years.] *Alyssum saxatile* is similar.

Alyssum saxatile. Golden Tuft Alyssum.—HV Compactum. Height: 8-12 in. Spread: 15-18 in. April 6-June 9. Yellow.—Straggly clumps.

Alyssum saxatile. Golden Tuft Alyssum.—HV Lemon. Height: 8-12 in. Spread: 15-18 in. April 10-July 17. Lemon yellow.—A good color of bloom.

Aquilegia canadensis. American Columbine. Height: 15-18 in. Spread: 12-15 in. May-June. Red and yellow. In Oklahoma, plant in a partially shaded site, protected from wind. Prefers moist, sandy loam soil. There are many horticultural varieties on the market; several are hybrids coming from this and other species. Sow seed in August for bloom the following year.

Artemesia albula. Silver King Sagebrush. Height: 18-24 in. Spread: 12-18 in. Inconspicuous blooms.—Good for foliage or filler in floral arrangements. Makes good dried foliage.

Artemesia sp. HV Silver Sheen. Height: 18-24 in. Spread: 12-18 in. Inconspicuous blooms.—Good for foliage, filler in floral arrangements, and dried foliage.

Aster novibelgi. New York Aster. Height: 18-24 in. Spread: 12-18 in. June 9-November 19. Blue.—Good in the border and for cutting. Prefers good, moist soil and partial shade. Propagate by division. Crimson flowered HV Beachwood Challenger is nice.

Boltonia asteroides. White Boltonia. Height: 2-3½ ft. Spread: 18-24 in. June 23-October 29. White.—Aster-like flowers that make good cut flowers. Good background and filler. Grows higher in more favorable climates. Divide. *Boltonia latisquama* is similar, but with pinkish flowers.

Campanula rapunculoides. Creeping Bellflower. Height: 24-30 in. Spread: 12-15 in. June 1-November 3. Violet.—Not a prolific bloomer in Oklahoma. Most Campanulas are biennials, not perennials, and

seed must be sown in July or August for bloom next year. Prefers a fertile limestone soil.

Centaurea macrocephala. Globe Centaurea. Height: 24-30 in. Spread: 15-20 in. May 9-June 17. Yellow.—Erect, thistle-like plants. Pollen beetles attack the flowers as they open. Not particular as to soil and likes a sunny location. Propagated by seed.

Cerastium tomentosum. Snow in Summer. Height: 4-6 in. Spread: 12-18 in. April 20-May 20. White.—Spreading growth habit. Good gray foliage. Fine for the rock garden or as edging. Grows in sun or partial shade in a variety of soils.

Chrysanthemum maximum. Shastadaisy. Height: 18-24 in. Spread: 12-18 in. June 28-September 30. White.—Excellent plants for the border and as cut flowers. Several horticultural varieties are good, especially Alaska and Conqueror. Select a site having a fertile soil that is easily pulverized and is well-drained during the winter. Extra water will be needed during the growing season because this plant is quick to show drought injury. HV Conqueror blooms from May 28 to August 22; HV King Edward VII blooms May 28 to September 30.

Chrysanthemum morifolium. Florist's Chrysanthemum. Height: 1-4 ft. Spread: 2-4 ft. September 16-November 19. Various.—A wonderful group of plants that finish the flowering season in grand style. Most garden "Mums" are hybrids, and the hybridizers have developed all the colors of the rainbow (except a good blue) and sizes that range from the compact little cushion types to the majestic tall sorts. Many types of flower heads are included—singles, doubles, spoons, pompoms, and others. Mums may be included in the perennial border, in front of shrubs, and in separate beds. They may be effectively used with walls and fences or hedges as background. Grow a row in the vegetable garden for cutting. Give them a site that is protected from the wind, well-drained (especially in the winter), but moist and fertile. Watch water needs closely during the summer and fall. Many soils will be helped by deep spading and the incorporation of weed-free, well-rotted cattle manure or organic matter as the planting bed is prepared. Many gardeners use a complete commercial-type fertilizer, applying a little in June and July to the surface of the soil and watering it into the ground. Watch closely for aphids or plant lice which usually appear on the tender tips first. Prompt spraying with a nicotine sulfate spray will control these pests. Repeat in a few days if more appear. Propagation should be by division or cuttings to preserve desired characteristics.

The following three varieties of this species are popular:

Chrysanthemum morifolium. Florist's Chrysanthemum—HV Early Joan Helen. Height: 15-18 in. Spread: 15-18 in. September 16-November 19. Purplish.—Cushion type. [All mums injured here by winter moisture.]

Chrysanthemum morifolium. Florist's Chrysanthemum—HV Martin's White. Height: 12-18 in. Spread: 12-18 in. April 16-November 7. White.—[All mums injured here by winter moisture in low areas.]

Chrysanthemum morifolium. Florist's Chrysanthemum—HV Red Velvet. Height: 12-18 in. Spread: 12-18 in. October 22-November 19. Crimson.

Chrysanthemum parthenium. Feverfew. Height: 18-24 in. Spread: 12-18 in. June 1-August 30. White.—Sometimes called *Matricaria capensis*.

Chrysanthemum sibericum. Korean Chrysanthemum. Height: 18-30 in. Spread: 18-30 in. October 19-November 22. Various colors.—These are relatively new types and have appeared chiefly as hybrids. Culture is similar to *Chrysanthemum morifolium*. [Avoid excess winter moisture.]

Dahlia rosea. Garden Dahlia. Height: 2-7 ft. Spread: 2-4 ft. September-October. Yellow, orange, and red chiefly.—Dahlias need staking or a sheltered site location. Many types are available—pompoms, miniatures, cactus, singles, Peony flowered, colossals, and others. Grown more for show purposes than landscape value. Propagated by division.

Dahlia sp. Avalon Dahlia. Height: 18-24 in. Spread: 18-20 in. September 22-October 30. Lemon yellow.—Needs staking or a sheltered site.

Dianthus arenarius. Finland Pink. Height: 10-12 in. Spread: 10-12 in. April 20-July 29. White.—Fragrant, lacy blossoms. This one will grow in considerable shade. The Pinks as a group prefer a light, well-drained soil. [Need attention to water in summer.] Will drown out in low spots or tight soils. Grow them in full sun or partial shade. Propagate by cuttings, layering, or seed. Old thick clumps may be divided if there are sufficient roots. Pinks fit into the rock garden, foreground of the border, and the cutting garden.

Dianthus deltoides. Maiden Pink. Height: 6-8 in. Spread: 10-18 in. April 27-August 30. Red.—Small blooms, the bulk of which are finished by June 30. Fine dwarf for rock garden. [Needs well-drained site.]

Dianthus gratianopolitanus superbus. Cheddar Pink. Height: 6-8 in. Spread: 10-18 in. April 27-September 17. Pink.—Fragrant blossoms. Another one for the rock garden.

Dianthus knappi. Hardy Garden Pink. Height: 10-15 in. Spread: 10-15 in. May 18-August 22. Yellow.—Unusual color; nice.

Dianthus latifolius. Button Pink. Height: 10-18 in. Spread: 10-15 in. May 28-October 17. Red.—Double carnation-like flowers. A good one.

Dianthus plumarius. Grass Pink. [Little Jock Hybrid]. Height: 10-15 in. Spread: 10-15 in. April 27-November 3. Various.—Long blossoming period with some flowers still blooming in early November. This one is among the best Pinks.

Dianthus sp. (Little Joe) Pink. Height: 5-10 in. Spread: 10-12 in. August 1-September 28. Crimson.—Interesting gray foliage.

Geum chilense. Chile Avens.—HV Mrs. Bradshaw. Height: 12-16 in. Spread: 10-12 in. May 18-July 19. Orange-red.—Needs a protected site. Avoid winter moisture.

Gypsophila pacifica. Pacific Gypsophila. Height: 18-24 in. Spread: 24-30 in. May 18-October 30. White.—Of more coarse texture than *Gypsophila paniculata*.

Helenium autumnale. Common Sneezeweed. Height: 2-3 ft. Spread: 2-2½ ft. August-September. Yellow gold.—Not too dependable. Can be used in the border or as cut flowers. Propagated from seed. (HV's propagated from cuttings or division.)

Helianthemum nummularium. HV Fickle Sunrose. Height: 10-12 in. Spread: 10-12 in. April 28-June 29. Pink.—A woody plant, but so small it is usually listed with herbaceous perennials. Fine for the rock garden or well-drained slopes. Prefers full sun. Propagated chiefly by softwood cuttings. [Needs winter mulch.]

Hemerocallis sp. Mikado Daylily. Height: 2½-3 ft. Spread: 2-2½ ft. June 13-September 11. Orange-red.—A Stout hybrid.

Hemerocallis sp. The Gem Daylily. Height: 3½-4 ft. Spread: 3-3½ ft. June 9-July 23. Orange yellow.—A Betscher hybrid.

Heuchera sanguinea. Coral Bells. Height: 12-18 in. Spread: 10-14 in. June 9-June 29. Crimson.—Plant in the rock garden or front of the border. These plants need a good, moist loam soil, and protection from summer winds. Division is usual means of propagation.

Hosta plantaginea. Fragrant Plantainlily. Height: 18-24 in. Spread: 2-2½ ft. July 25-August 13. White.—Needs shady location out of wind. Prefers a relatively rich loam soil and plenty of moisture. Divide the clumps every two or three years.

Iberis sempervirens. Evergreen Candytuft. Height: 8-10 in. Spread: 12-16 in. March 20-June 29. White.—Evergreen foliage. A useful plant in the border as edging, in the rock garden, in planting boxes, or a variety of other ways. Prefers a moderately rich, sandy loam soil and a sunny or partially shaded site. Extra water in the dry periods is essential. Take cuttings in September to increase *Iberis*. [HV Snowflake is good.]

Iris kaempferi. Japanese Iris. Height: 2-2½ ft. Spread: 18-24 in. May 11-June 2. Various.—These *Iris* differ from the ordinary "German" *Iris* in that they have narrow leaves and broad flat flowers. Their culture is also different. Fertile, slightly acid soil and lots of moisture, especially during the season of bloom, are required. Plant at the edge of a pool or similar location. Division is the best method of propagation. [Survival poor.]

Iris kaempferi. Japanese Iris—HV Fascination. Height: 2-2½ ft. Spread: 18-24 in. May 22-June 16. Mauve.—[Excellent survival.] Appreciates, but does not demand, extra water.

Iris kaempferi. Japanese Iris—HV Torchlight. Height: 2-2½ ft. Spread: 18-24 in. June 9-June 17. Chinese red.—[Survival fair.]

Iris pseudacorus. Yellow Flag Iris. Height: 2-3 ft. Spreading. May-June. Rich yellow.—Forms nice large clumps. Prefers moist soil, but is not essential. Will grow with its "feet" in water.

Iris siberica. Siberian Iris. Height: 12-24 in. Spreading. May-June. White and blue.—A dainty type beardless *Iris*. Appreciates a little extra moisture.

Lavandula officinalis. True Lavender. Height: 18-24 in. Spread: 2½ ft. May 4-November 10. Lavender-blue.—The fragrant gray foliage is a welcome bit of variety in shrub plantings, the perennial border, or the rock garden. Many people prepare sachet bags using the fragrant foliage. A light loam soil in a well-drained sunny location is preferred. [Some winter protection helpful.] Get these from your florist or nurseryman.

Lilium tigrinum. Tiger Splendens Lily. Height: 3-5 ft. June 16-July 22. Orange.—Keep soil over roots shaded or mulched.

Linum flavum. Golden Flax. Height: 10-12 in. Spread: 12-16 in. April 27-October 16. Golden yellow.—Oklahomans should use this one more. *Variety compactum* is good, also. Does well in most garden soils in sun and partial shade. Propagate by seed or division.

Lythrum salicaria. Purple Loosestrife. Height: 3-4 ft. Spread: 2-3 ft. May 4-September 30. Rosy purple.—Erect spikes. Likes a moist situation at the edge of a pond or stream. HV Mordens is similar with pink flowers.

Monarda didyma. Oswego Beebalm. Height: 18-30 in. Spread: 15-20 in. June-September. Dark red to scarlet.—Must be in moist soil and protected from wind. Divide in early spring.

Muscari botryoides. Grapehyacinth. Height: 3-4 in. March 5-March 20. Blue.—Rabbits will eat foliage if not protected.

Phlox subulata. Moss Phlox. Height: 6-8 in. Spread: 10-15 in. April-May. Pink.—This is a wonderful little creeping plant with dark green foliage. It is covered with a blanket of pink flowers in the spring. One of the brightest in the rock garden, as an edging plant, or for covering small slopes. Try combining with tulips. Reproduce by softwood cuttings. HV Vivid is one of the best.

Phlox paniculata. RP Struther's Phlox. Height: 2-2½ ft. Spread: 1-2 ft. June 9-September 11. Rose pink.—Compact panicle of flowers.

Scilla siberica. Siberian Squill. Height: 6-8 in. March 3-March 20. Blue.—Like the early crocus, these are eaten by rabbits.

Sedum aizoon. Aizoon Sedum. Height: 4-6 in. Spread: 10-15 in. June 15-August 5. Orange yellow.—Succulent foliage.

Stokesia laevis. Stokesia—HV (Bluemoon). Height: 10-15 in. Spread: 10-15 in. May 20-June 5. Blue.—Requires careful attention to watering in summer. Some difficulty in getting it established. Use in the front of the border. Plant in well-drained soils and avoid winter moisture. Propagate by seed.

Veronica incana. Woolly Speedwell. Height: 10-12 in. Spread: 8-12 in. May 4-June 30. Blue.—Interesting gray foliage. Use in rock garden and perennial border. Needs a moist situation, but will grow in a variety of soils in full sun or partial shade. Propagate by division or cutting.

Veronica maritima. Clump Speedwell. Height: 12-24 in. Spread: 10-12 in. May 11-November 19. Blue, violet.—Likes a sunny site, but needs extra water for best results.

Veronica maritima subsessilis. Clump Speedwell. Height: 12-16 in. Spread: 10-12 in. June 22-October 27. Blue.—Water during summer.

Veronica sp. HV Crater Lake Blue. Height: 12-16 in. Spread: 10-12 in. May 24-September 29. Deep blue.—Light green foliage contrasts well with blue flowers.

Viola odorata. Sweet Violet. Height: 6-8 in. Spread: 6-8 in. March-April. Violet.—Many horticultural varieties. Grows best in a moist site with partial shade. Fine for naturalizing in the shade of trees and shrubs. Division is usually practiced, as plants from seed of the HV's will not be true to character.

Hardy Flowering Bulbs For Oklahoma

The following list of bulbs includes only those which can be left in the soil overwinter. Information below includes the botanical and common names of the plants, the average height of the plant, the period of bloom by the beginning and ending months, the color of bloom, and general suggestions for planting and care.

Colchicum autumnale. Common Autumncrocus (Meadow Saffron). Height: 4-6 in. September-October. Purple to white.—The bulbs are planted in August in light sandy loam about 3 inches deep. By September the flowers pop up without foliage. This "phenomenon" has led to the bulbs being sold as "Mystery Flowers" that bloom without planting. They will do this, but the practice is not good for them. Properly planted, foliage grows in the spring, matures and dies by June. They lie dormant until fall and "Presto!" the blooms appear as if by magic.

Crocus vernus. Common Crocus. Height: 3-4 in. February-March. Purple and blue.—A true forerunner of spring. Corms are often planted in masses or "drifts" for naturalizing in lawns. Prefers light warm soil. Plant about 3 inches deep. Rabbits will often keep foliage eaten off and thereby weaken bulbs. Allow foliage to mature to strengthen corms. Good for the rock garden. Dig and divide every two or three years in September or October. Another species, *Crocus susianus*, the Cloth-of-Gold Crocus, produces golden yellow flowers.

Hyacinthus orientalis. Common Hyacinth. Height: 8-12 in. March-April. Various.—Plant 5-6 inches deep in the fall to allow root growth. A fertile sandy loam is best. After blooming, allow the foliage to mature to insure strong bulbs for next year.

Lilium dauricum. Dahurian Lily. Height: 2-3 ft. June. Orange red.—This lily is one of the shorter stemmed types that have wide, open flowers that stand erect on the flower stalk. Lilies as a group have certain growth requirements such as a moist, relatively fertile loam soil which is well-drained to prevent rotting of the bulbs. This lily likes to grow where there is full sun or partial shade. Plant in a situation where some ground cover or low plantings will shade the soil to keep it cool, or put a coarse mulching material on the area. Avoid planting near greedy surface roots of elms, maples and similar trees. Lilies add color and texture variety to the perennial border and to shrubs (especially evergreens). Some of the smaller types may be used in the rock garden or in naturalizing, as narcissus are often used. Propagation of lilies is discussed in the text under that heading.

Lilium formosanum. Formosa Lily. Height: 3-4 ft. June-July. Off-white.—Once Called *Lilium philippinense formosanum*. Has an Easter Lily type bloom. Easy to grow from seed.

Lilium pumilum. Coral Lily. Height: 18-24 in. April-May. Scarlet.—Formerly listed as *Lilium tenuifolium*. A small lily with recurved petals. Bulbs may last but two or three years. Easily grown from seed, however. This one can be used in the rock garden.

Lilium regale. Regal Lily. Height: 3-4 ft. May-June. White.—Plant bulbs 8 inches deep. Keep out of strong winds. White trumpet flowers are shaded toward yellow inside and purplish outside. Will bloom the third year from seed.

Lilium tigrinum. Tiger Lily. Height: 3-5 ft. June-July. Orange-red, with dark spots.—This is one of the most popular garden lilies. Should be planted some 8 or 9 inches deep. Produces little bulbils in the axils of the leaves next to the stem. When the bulbils are mature they may be planted to produce new flowering bulbs.

Lycoris squamigera. Autumn Lycoris. Height: 2-2½ ft. August. Rosy purple.—Foliage appears in spring, matures and dies down. Flowers shoot up in August on bare stems. This plant is related to *Amaryllis*. Plant bulbs about 4 inches deep.

Muscari botryoides. Grapehyacinth. Height: 3-4 in. March. Blue.—These are dainty little fellows. Their name in Latin means

"bunch of grapes," referring to the clusters of blue flowers. Well adapted. Plant some in the rock garden or front of the perennial border. Will grow in sun or shade.

Narcissus sp. Narcissus (Daffodil) (Jonquil). Height: 8-24 in. March-April. Various—mostly yellow and white.—Most Narcissus are well adapted to Oklahoma conditions. It is a group of plants which has long enjoyed a favorite spot in the plantings of many gardeners. Narcissus are classified into several groups representing different types, and hundreds of horticultural varieties. They are easy to grow and can remain in the soil for several years before transplanting is necessary. Good drainage is essential. Sandy loam soil in full sun or partial shade is satisfactory. Groupings of Narcissus in front of shrubs, in the foreground of the perennial border, or naturalized in woodsy lawns are colorful additions to the spring landscape. As the foliage matures, annual flowers can be started in the border to "take over" for the remainder of the season.

Scilla siberica. Siberian Squill. Height: 6-8 in. March. Blue.—Like the early crocus, these flowers are eaten by rabbits. Will grow in sun or shade.

Tulipa gesneriana. Common Tulip. Height: 4-18 in. March-May. Various.—Tulips of many kinds can be obtained as horticultural varieties, many of these being hybrids. A little effort spent in preparing the soil—spading it deep and adding fertilizer and organic matter—will produce better tulips. Like other bulbs, they need a well-drained soil to prevent rotting of the bulbs. Some gardeners dig and store them each winter, although this is not necessary. However, dividing the clumps of bulbs about every three years is a good practice. Plant them 5 to 6 inches deep.

Group III

Poorly-responding Perennials

The following plants respond poorly, or not at all, to Oklahoma growing conditions and are not recommended for planting in this State.

Scientific Name	Common Name
<i>Ajuga genevensis</i>	Geneva Bugle
<i>Allium flavum</i>	Yellow Onion

Scientific Name	Common Name
<i>Allium sphaerocephalum</i>	Ballhead Onion
<i>Allium (arilli)</i>	—
<i>Anthemis tinctoria</i>	Golden Camomile
<i>Arabis alpina</i>	Alpine Rockcress
<i>Argentea sp.</i>	----
<i>Armeria pseudoarmeria rubra</i>	Rose Pinkball Thrift
<i>Armeria sp.</i>	(Glory-of-Holland Thrift)
<i>Artemisia sp.*</i>	(HV Silver Spire)
<i>Asphodeline lutea</i>	Common Jacobsrod
<i>Aster alpinus</i>	HV Goliath Alpine Aster
<i>Aster thomsoni</i>	HV Frikarti
<i>Aster novibelgi</i>	Ney York Aster
<i>Aster novibelgi</i>	HV Blue Gown
<i>Aster novibelgi</i>	HV Climax
<i>Aster novibelgi</i>	HV Mt. Everest
<i>Aster novibelgi</i>	HV Palmyra
<i>Aster novibelgi</i>	HV Royal Pink
<i>Aster novibelgi</i>	HV St. Egwin
<i>Bellis perennis</i>	English Daisy
<i>Boltonia latisquama*</i>	Violet Boltonia
<i>Brunnera macrophylla</i>	Heartleaf Brunnera
<i>Campanula rotundifolia</i>	Bluebell
<i>Campanula persicifolia</i>	HV Telham Beauty Bellflower
<i>Campanula persicifolia</i>	(HV Wedgewood Bellflower)
<i>Centaurea dealbata</i>	Persian Centaurea
<i>Centranthus ruber</i>	Jupitersbeard
<i>Chrysanthemum coccineum</i>	Florists Pyrethrum
<i>Chrysanthemum maximum*</i>	Shastadaisy, C. L. Bell
<i>Chrysanthemum morifolium*</i>	HV Anne
<i>Chrysanthemum morifolium*</i>	HV Burgundy
<i>Chrysanthemum morifolium*</i>	HV Cody
<i>Chrysanthemum morifolium*</i>	Early Harvest
<i>Chrysanthemum morifolium*</i>	HV (Eugene A. Wander)
<i>Chrysanthemum morifolium*</i>	(Golden Spoon)
<i>Chrysanthemum morifolium*</i>	(Hurleys Supreme)
<i>Chrysanthemum morifolium*</i>	HV (Ivory Glow)
<i>Chrysanthemum morifolium*</i>	HV Pohatcong
<i>Chrysanthemum morifolium*</i>	HV (Red Gold)
<i>Chrysanthemum morifolium*</i>	HV William Langland
<i>Chrysanthemum morifolium*</i>	HV W. P. Snyder

* Can be grown in Oklahoma with care, but listed in this group because of poor response due to disease, insects, or human damage in the course of this test.

Scientific Name	Common Name
<i>Clematis fremonti</i>	Fremont Clematis
<i>Dahlia*</i>	HV Imp. Frances Larocco
<i>Dahlia*</i>	HV Jean Kerr
<i>Dahlia*</i>	HV Jersey Beauty
<i>Dahlia*</i>	HV Kentucky
<i>Dahlia*</i>	HV White Fawn
<i>Dianthus plumarius*</i>	HV Cyclops Grass Pink
<i>Digitalis ambigua</i>	Yellow Foxglove
<i>Digitalis lutzii</i>	Lutz Foxglove
<i>Digitalis purpurea</i>	HV Double Foxglove
<i>Doronicum caucasicum</i>	Caucasian Leopardsbane
<i>Echinacea purpurea*</i>	Purple Echinacea
<i>Erigeron speciosus</i>	HV Purple Fleabane
<i>Fuchsia magellanica</i>	Magellan Fuchsia
<i>Fuchsia</i>	(Senorita Fuchsia)
<i>Gaillardia aristata*</i>	HV Barnes Ruby
<i>Gaillardia aristata*</i>	HV Tangerine
<i>Gaillardia*</i>	(Burgundy)
<i>Helenium bigelowii</i>	Bigelow Sneezeweed
<i>Helenium tenuifolium</i>	HV Riverton Gem Sneezeweed
<i>Heliopsis scabra</i>	HV Orange Heliopsis
<i>Heuchera sanguinea</i>	HV (Heavenly Blue)
<i>Iris*</i>	HV (Sambo)
<i>Isatis glauca</i>	Smooth Woad
<i>Ismene calathina</i>	Peruvian Daffodil
<i>Lilium concolor</i>	Morningstar Lily
<i>Limonium puberulum</i>	Yellowshrub Sealavender
<i>Linum narbonnense</i>	Narbonne Flax
<i>Lupinus polyphyllus</i>	HV Russell Hybrids
<i>Lychnis arkwrightii</i>	Arkwright Campion
<i>Lychnis viscaria</i>	HV Double Rose Piink
<i>Monarda didyma*</i>	HV Cambridge Scarlet Beebalm
<i>Monarda</i>	(Dahlia Town Orchid)
<i>Oxalis bowieana</i>	Bowie Oxalis
<i>Oxalis deppei</i>	Rosette Oxalis
<i>Oxalis lasiandra</i>	Primrose Oxalis
<i>Papaver orientale</i>	Oriental Poppy
<i>Papaver nudicaule</i>	Iceland Poppy
<i>Penstemon ambiguus</i>	Gilia Penstemon
<i>Phlox amoena</i>	Amoena Phlox
<i>Phlox subulata*</i>	HV (Pearl)
<i>Polemonium caeruleum</i>	Greekvalerian
<i>Rudbeckia hirta*</i>	Black-eyed-susan
<i>Salvia azurea*</i>	Azure Sage
<i>Salvia patens</i>	Gentian Sage
<i>Santolina (tomentosa)</i>	Lavendercotton
<i>Scabiosa caucasica</i>	(Houses New Hybrids— Caucasian Scabious)

Scientific Name	Common Name
<i>Sidalcea nervata</i>	Rosy Gem (Nelson Checker-mallow)
<i>Sidalcea</i>	(New Hybrids)
<i>Silene schafta</i>	Schafta Silene
<i>Sprekelia formosissima</i>	Aztec Lily
<i>Tigridia pavonia</i>	Spotless Tigerflower
<i>Tigridia pavonia</i>	HV (Le Geant Rouge) Tiger-flower
<i>Tigridia pavonia</i>	Pure Gold Tigerflower
<i>Tritonia</i>	HV (Fantasy)
<i>Tritonia</i>	HV Fireking
<i>Tritonia</i>	HV George Davison
<i>Tritonia</i>	HV Lady Hamilton
<i>Tritonia rosea</i>	Capetritonia
<i>Verbascum phoeniceum</i>	Purple Mullein

Cross Reference Index

Common Name	Botanical Name
Achillea	<i>Achillea</i>
Althea	<i>Althea</i>
Alyssum	<i>Alyssum</i>
Amsonia	<i>Amsonia</i>
Aquilegia	<i>Aquilegia</i>
Artemisia	<i>Artemisia</i>
Asclepias	<i>Asclepias</i>
Aster	<i>Aster</i>
Avens	<i>Geum</i>
Baptisia	<i>Baptisia</i>
Babysbreath	<i>Gypsophila</i>
Balloonflower	<i>Platycodon</i>
Beardstongue	<i>Penstemon</i>
Beebalm	<i>Monarda</i>
Bellflower	<i>Campanula</i>
Bergamot	<i>Monarda</i>
Blanket flower	<i>Gaillardia</i>
Blazing star	<i>Liatris</i>
Boltonia	<i>Boltonia</i>
Bugle	<i>Ajuga</i>
Butterfly Milkweed	<i>Asclepias</i>
Bugloss	<i>Anchusa</i>
Callirhoe	<i>Callirhoe</i>
Campanula	<i>Campanula</i>
Candytuft	<i>Iberis</i>
Canterbury bells	<i>Campanula</i>

Common Name	Botanical Name
Catnip	<i>Nepeta</i>
Carpet bugle	<i>Ajuga</i>
Centaurea	<i>Centaurea</i>
Cerastium	<i>Cerastium</i>
Ceratostigma	<i>Ceratostigma</i>
Chalk plant	<i>Gypsophila</i>
Chiggerweed	<i>Asclepias</i>
Chrysanthemum	<i>Chrysanthemum</i>
Coneflower	<i>Echinacea</i>
Columbine	<i>Aquilegia</i>
Coral bells	<i>Heuchera</i>
Coreopsis	<i>Coreopsis</i>
Cornflower	<i>Centaurea</i>
Crocus	<i>Crocus</i>
Cupflower	<i>Nierembergia</i>
Daffodil	<i>Narcissus</i>
Dahlia	<i>Dahlia</i>
Daylily	<i>Hemerocallis</i>
Dustymiller	<i>Artemisia</i>
Echinacea	<i>Echinacea</i>
Eryngo	<i>Eryngium</i>
Eupatorium	<i>Eupatorium</i>
Euphorbia	<i>Euphorbia</i>
Evening Primrose	<i>Oenothera</i>
False Dragonhead	<i>Physostegia</i>
False Indigo	<i>Baptisia</i>
False Starwort	<i>Boltonia</i>
Flag	<i>Iris</i>
Flax	<i>Linum</i>
Flowering Spurge	<i>Euphorbia</i>
Funkia	<i>Hosta</i>
Gaillardia	<i>Gaillardia</i>
Gayfeather	<i>Liatris</i>
Germander	<i>Teucrium</i>
Geum	<i>Geum</i>
Golden flax	<i>Linum</i>
Goldenrod	<i>Solidago</i>
Goldentuft	<i>Alyssum</i>
Grapehyacinth	<i>Muscari</i>
Gypsophila	<i>Gypsophila</i>
Hardy Ageratum	<i>Eupatorium</i>
Hardy Phlox	<i>Phlox</i>
Hedgehog Coneflower	<i>Echinacea</i>
Helianthemum	<i>Helianthemum</i>
Helianthus	<i>Helianthus</i>
Heliopsis	<i>Heliopsis</i>
Hemerocallis	<i>Hemerocallis</i>
Heuchera	<i>Heuchera</i>

Common Name	Botanical Name
Hibiscus	<i>Hibiscus</i>
Hollyhock	<i>Althea</i>
Hosta	<i>Hosta</i>
Hyacinth	<i>Hyacinthus</i>
Iberis	<i>Iberis</i>
Iris	<i>Iris</i>
Joe Pye Weed	<i>Eupatorium</i>
Jonquil	<i>Narcissus</i>
Kansas Gayfeather	<i>Liatris</i>
Knapweed	<i>Centaurea</i>
Kniphofia	<i>Kniphofia</i>
Lathyrus	<i>Lathyrus</i>
Lavandula	<i>Lavandula</i>
Lavender	<i>Lavandula</i>
Lavendercotton	<i>Santolina</i>
Leadwort	<i>Ceratostigma</i>
Liatris	<i>Liatris</i>
Lily	<i>Lilium</i>
Limonium	<i>Limonium</i>
Linaria	<i>Linaria</i>
Linum	<i>Linum</i>
Lionsheart	<i>Physostegia</i>
Liveforever	<i>Sedum</i>
Loosestrife	<i>Lythrum</i>
Lythrum	<i>Lythrum</i>
Maximilian Sunflower	<i>Helianthus</i>
Michaelmas Daisy	<i>Aster</i>
Milfoil	<i>Achillea</i>
Mistflower	<i>Eupatorium</i>
Monarda	<i>Monarda</i>
Moss Phlox	<i>Phlox</i>
Mouse-ear	<i>Cerastium</i>
Mums	<i>Chrysanthemum</i>
Muscari	<i>Muscari</i>
Narcissus	<i>Narcissus</i>
Nepeta	<i>Nepeta</i>
Orange Sunflower	<i>Heliopsis</i>
Oenothera	<i>Oenothera</i>
Oswego Beebalm	<i>Monarda</i>
Paeonia	<i>Paeonia</i>
Peony	<i>Paeonia</i>
Perennial Flax	<i>Linum</i>
Penstemon	<i>Penstemon</i>
Phlox	<i>Phlox</i>
Physotegia	<i>Physostegia</i>
Piney	<i>Paeonia</i>
Pinks	<i>Dianthus</i>
Pitchers Sage	<i>Salvia</i>

Common Name	Botanical Name
Plantainlily	<i>Hosta</i>
Platycodon	<i>Platycodon</i>
Plumbago	<i>Ceratostigma</i>
Poppymallow	<i>Callirhoe</i>
Red Hot Poker	<i>Kniphofia</i>
Rosemallow	<i>Hibiscus</i>
Sage	<i>Salvia</i>
Salvia	<i>Salvia</i>
Santolina	<i>Santolina</i>
Scilla	<i>Scilla</i>
Sea Holly	<i>Eryngium</i>
Sealavender	<i>Limonium</i>
Sedum	<i>Sedum</i>
Shastadaisy	<i>Chrysanthemum</i>
Snow-in-summer	<i>Cerastium</i>
Solidago	<i>Solidago</i>
Speedwell	<i>Veronica</i>
Spurge	<i>Euphorbia</i>
Squill	<i>Scilla</i>
Statice	<i>Limonium</i>
Stokes Aster	<i>Stokesia</i>
Stokesia	<i>Stokesia</i>
Stonecrop	<i>Sedum</i>
Summer Forget-me-not	<i>Anchusa</i>
Sundrop	<i>Oenothera</i>
Sunflower	<i>Helianthus</i>
Sunrose	<i>Helianthemum</i>
Teucrium	<i>Teucrium</i>
Tickseed	<i>Coreopsis</i>
Toad flax	<i>Linaria</i>
Torchlily	<i>Kniphofia</i>
Tritoma	<i>Kniphofia</i>
Tulip	<i>Tulipa</i>
Verbena	<i>Verbena</i>
Veronica	<i>Veronica</i>
Vesper Iris	<i>Iris</i>
Violet	<i>Viola</i>
White Snakeroot	<i>Eupatorium</i>
Wild Bergamot	<i>Monarda</i>
Wildindigo	<i>Baptisia</i>
Willow Amsonia	<i>Amsonia</i>
Wine Cup	<i>Callirhoe</i>
Wormwood	<i>Artemisia</i>
Yarrow	<i>Achillea</i>

